

REQUIEM FOR A GIANT

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THERE was nothing momentous to the world at large about 25 July 1939. Nor did the first test flight of a prototype aircraft from A. V. Roe's Woodford Airfield in England that day cause any great stir in international aviation circles. However, within six weeks the bloodiest war in history began, and from the obscure prototype a bomber evolved which contributed more than any other to the winning of World War II.

The prototype, built to an Air Ministry specification of 1936 for a twin-engined medium bomber, went into production. Shortly before the end of 1940 the production model entered squadron service with RAF Bomber Command as the *Manchester I*. It proved an operational failure. Its Vulture engines, under-powered and over-heating, could not lift it above the critical flak level, and on one engine it could not even remain airborne. In June 1942 the *Manchester* had to be taken off operations.

It did not die without next-of-kin, a happy fact attributable mainly to the far-sightedness of the late Roy Chadwick and his design team. In mid-1940, before *Manchester* production had even begun, they had insured against the possibility of the Vulture engine's failure by considering alternative power-plants. Engine installations were accordingly designed for a proposed *Manchester II*, with two Bristol Centaurus or Napier Sabre engines. Neither was ever installed, however, for the *Manchester II* went barely beyond the drawing-board. It was headed off by an inspiration to use not just two engines, but four, those being Rolls-Royce Merlin Xs.

The adaptability of the *Manchester's* airframe facilitated speedy construction of prototype *Manchester III*, which embodied about three-quarters of the Mark I's components. The main difference between the two variants lay in the Mark III's added 12 feet of wing centre-section and the two extra engines it accommodated. This was modification enough to justify a change of name from *Manchester* to *Lancaster*.

The *Lancaster's* maiden flight took place on 9 Jan. '41. A second prototype, fitted with four 1280-h.p. Merlin XXs, was designed, built and test-flown within eight months. With its progressive modification and improvement, less and less of the original *Manchester* configuration remained and there finally emerged the *Lancaster I*, which reached the first squadrons early in 1942. The operational debut of the new bomber — a sea-mining excursion to the Heligoland Bight on 3 March — gave little hint that the *Lancaster* was destined to be nocturnal anathema to the vast Nazi industrial complex. Nor did a low-level daylight penetration in mid-April to the M.A.N. Diesel Works at distant Augsburg, Bavaria, for which S/L John D. Nettleton earned the first of ten Victoria Crosses to be awarded to *Lancaster* aircrew; or another audacious and historic intrusion by day to the arms factory at Le Creusot the following October. The latter pair of attacks were two early examples of devastating precision bombing by *Lancasters* in daylight. Still another attack delivered by day-flying *Lancs* was made in July 1942 on shipyards at

Danzig, Poland. Involving a round trip of 1750 miles, that operation compared favourably, for distance flown, with the longest bomber operations of the war.

Yet, unquestionably the strongest image of the *Lancaster*, in the minds of many thousands who flew, fought, or simply feared it, was that of the night-time nemesis of Fortress Europe's war economy. One of the most fantastic, sensational and damaging aerial strokes of the European war was dealt by *Lancasters* of No. 617 Sqn. on 17 May '43, in what could be classified as a night of precision attack on a strategic target. The objective was to breach, simultaneously, the Mohne, Eder and Sorpe Dams, prime sources of hydro-electric power for the industry-packed Ruhr Valley.

Specially-modified *Lancasters* were the only aircraft able to house the ingenious "bouncing ball" bomb designed by Dr. Barnes Wallis specifically for this operation. No other aircraft on operations has dropped a bomb like it. Actually a cylindrical mine, it had first to be given a back-spin by a specially-installed motor and then released from 60 feet above the dam reservoir, bouncing in a manner calculated to bring it to rest at the base of the dam wall. A longer fall might cause premature detonation or fracture its casing; a shorter fall might cause it to sink prematurely. As no pressure altimeter was sensitive enough for the purpose, 617's *Lancs* each had to be fitted with an improvised visual-reference device so simple yet so accurate as to be without parallel in the annals of military aviation — two spotlights placed so that their downward-projecting beam formed a figure eight on the water when the aircraft was at the desired height.

History has recorded the brilliant success of the unorthodox bombing system.* W/C Guy Gibson and his crews, including 29 Canadians, scored bull's-eyes on the Mohne and Eder Dams, causing widespread flooding of the Ruhr and dislocating the valley's industry generally. Among the many decorations earned on the operation was a Victoria Cross by squadron commander Guy Gibson.

*THE DAM BUSTERS, Paul Brickhill, Evans Brothers Ltd., London, 1951.

In their 38 months of war-time operations *Lancasters* attacked virtually every primary strategic target within effective range. From their cavernous bomb-bays fell some two-thirds of the shattering weight of bombs delivered by the entire RAF from January 1942 onward. Much the greater part of their total tonnage (608,612) was dropped in the great saturation raids on industrial centres, which became the trademark of Bomber Command.

Even while assisting in the progressive destruction and dislocation of Nazi industry in Europe, on the other side of the Atlantic the *Lancaster* was in fact a stimulus to a growing Canadian industry. Selected early in 1942 for production by Victory Aircraft Limited in Toronto, the *Lanc X* was fitted with Packard-built Merlin engines. The first of 430 Canadian-built *Lancs*, bearing serial number KB700 and aptly christened "The Ruhr Express", was delivered to the RCAF on 6 Aug. '43. Ferried overseas in September by S/L (now A/C) R. J. Lane, DFC, and his crew, of No. 405 (Pathfinder) Sqn., it received its operational christening by marking Berlin on 22 November.

The *Lancaster* represents a milestone in the life of Canada's aircraft industry. It was the first four-engined aircraft built in Canada and, up to that time, by far the heaviest and most complex. Its manufacture, involving multifarious new problems associated with tooling-up and mass production, gave the young industry know-how and experience which were to prove invaluable in the post-war years.

The "Ruhr Express" was not the first *Lancaster* to reach a Canadian squadron. Preceding it by several months were the British-built Mark IIIs and IIs (the latter with Bristol radial engines) acquired by Nos. 405 and 426 Sqns., respectively. In all, at least 59 squadrons of Bomber Command flew *Lancasters*, and 14 of those (12 on operations) belonged to the RCAF's No. 6 Group. It was aboard a *Lancaster* X of No. 419 Sqn. that mid-upper gunner P/O Andrew C. Mynarski performed a conspicuous act of valour leading to his posthumous award of the Victoria Cross. He was the second member of the RCAF to receive the Commonwealth's highest decoration, and the only non-pilot among Canada's seven VCs of the air.

By 1944 *Lancasters* had largely replaced the *Halifaxes* and *Stirlings* as the backbone of Bomber Command. Their epic operations in 1944-45 alone were legion. They bludgeoned Berlin a dozen times, flooded the Wehrmacht on Walcheren Island by breaching a dyke at Westkapelle, blocked the Saumur Tunnel and sank the Tirpitz in Tromso Fjord with deep-penetration 12,000-lb. "tallboys". Their greatest weight-lifting feat of all was reserved for 14 Mar. '45, when a No. 617 Sqn. *Lanc* delivered to the Bielefeld Viaduct a bomb whose weight compared favourably to the basic weight (23,900 lbs.) of the carrier aircraft—the 11-ton "grand slam", air warfare's ultimate conventional weapon. No other aircraft has dropped as heavy a bomb or bomb-load on a wartime operation, not even the B-29, which weighed more than twice the *Lancaster* and had some 3600 more horses working for it.

A lasting impression of the bomber's carrying capacity was gleaned by the aircrew themselves on operations of a tactical rather than strategic nature. Crews will not soon forget the sight of those long sticks of 20 500-pounders dropping at the rate of two-per-second from *Lancs* operating by day over Caen, the Falaise Gap, Boulogne, Calais and Cap Gris Nez, among other targets, in support of the Allied armies. Nor will the Wehrmacht, attacked as it so often was by hundreds of *Lancasters* in quick succession, each blasting a hellish half-mile pattern through its strong-points. Small wonder it was that Field Marshal von Rundstedt considered the "carpet-bombing" of his troops the most demoralizing form of attack experienced by German soldiers in the field.

If the lifting ability of A.V. Roe's heavyweight was remarkable, only slightly less remarkable were its flying characteristics. Aerodynamically superb in every way, it possessed the light handling qualities of much smaller aircraft. With a bomb-load it was scarcely heavier on the controls than when empty. Yet its structure was unusually robust, enabling it to withstand the severe aerodynamic stress of a dive, loop or roll, besides extensive battle-damage.

A drama enacted thousands of times over war-torn Europe was the heavily-laden yet still-nimble *Lanc* being "stood on its ear" while corkscrewing violently to evade a night-fighter. The drama was given a day-time setting on 31 Mar. '45 when the Luftwaffe made its first and last large-scale interception by day of a Canadian heavy-bomber force. Without fighter cover because of a timing error, No. 6 Group's *Lancaster* gaggle was singled out over Hamburg for con-

concentrated attack by some 30 *Messerschmitt 262s*, Germany's first operational jet interceptors. The *Lancs* fought back as never before. For the first time in anger their Browning, .303s blazed away from all three turrets at once. Five of their number fell, but at least four and possibly seven jets also went down in the biggest air-to-air battle fought by a Bomber Command formation in daylight.

To confine the *Lancaster's* war story to bombing in the strictest sense would be to overlook the vital contribution of the Pathfinders skippered by men such as Leonard Cheshire, VC, one of the war's greatest bomber pilots, Ian Bazalgette, a Canadian in the RAF and the only VC among Canadian bomber pilots, and Johnny Fauquier, the RCAF's top Pathfinder and only triple DSO; the sowing of thousands of mines in enemy harbours and sea-lanes from the Frisian Islands to remote Pomerania Bay; and the air war's classic stroke of deceit — No. 617 Sqn.'s precise cross-Channel orbiting on D-Day eve, which, by the steady dropping of "window" (metallized paper strips that appeared on German radar screens as an approaching invasion fleet), created the false impression that landings were imminent on the Pas de Calais.

A soul-satisfying raid that smashed Hitler's mountain retreat at Berchtesgaden on 25 Apr. '45 was one of the last hostile acts by *Lancasters*. It was a fitting conclusion to the war-time log of an aircraft which had done more than any other to end the Nazi regime.

In the late spring of 1945 *Lancasters* of the RCAF made more aviation history as eight Canadian squadrons ferried their Mark Xs home to Canada. Theirs was the first multi-squadron trans-Atlantic flight by any air force in the world.

Stripped of its war-paint, the one-time dark destroyer of Nazism became a gleaming-silver camera platform for photo survey operations by the RCAF in the Canadian north. In the decade from 1947 to 1957, *Lancs* of No. 408 Sqn. played an indispensable dual role in the aerosurvey of 3½ million square miles of Northern Canada and the Arctic Archipelago. They not only photographed vast uncharted areas along with their *Dakota* and *Mitchell* co-workers, but also fulfilled a vital complementary function that enabled our map-makers to determine with fine accuracy the position of any area photographed. For the latter purpose they were equipped with SHORAN, related to a war-time radar aid-to-navigation known as LORAN. So, in time of peace, they did further distinguish themselves by completing the gargantuan task of unrolling the map of Canada, using radar principles originally developed and applied in time of war.

A similar post-war assignment was carried out by RAF *Lancasters* of Bomber Command, which accomplished a 1,216,000-square-mile survey of East, Central and West Africa in six years. A maritime version was in first-line use with Coastal Command for several years, until superseded by the *Shackleton*. The RAF's last *Lancaster* (retired in 1956) was, in fact, a maritime trainer.

Lancs of the post-war RCAF also went seaward, with Nos. 405, 404 and 407 (Maritime Patrol) Sqns. Cooperating with NATO air and surface forces of the U.K. and the United States, they flew from such widely separated bases as Vancouver, Resolute Bay, Key West and St. Eval, England, on anti-submarine and anti-surface-raider exercises. Their gradual withdrawal from

maritime reconnaissance duties in favour of the *Neptune* and *Argus* was completed in 1959, after a near-decade of distinguished service. As the Vancouver Sun expressed it on 13 May of that year, "It was such a sight as will never again be seen in western Canada. Fifty-eight thousand pounds of aircraft boiling down the runway, four 12-cylinder piston engines raging at their task of putting 5,000 take-off horsepower. A slamming roar of four propellers and 48 exhaust stacks, the screech of air through oil cooler grids, and the last *Lancaster* heaved itself into the air, awkwardly folding its stork-like under-carriage legs into the inboard engine nacelles. This was Tuesday. At 9:30 a.m. today the last *Lancaster* in the RCAF's Maritime Command, RX-219, took off to climb wearily over the Rockies to Calgary. There it went into "dead storage" at the end of its last flight."

A third major peacetime function of RCAF *Lancasters* was that of search and rescue, undertaken as a primary function by SAR units and as a secondary function by maritime squadrons. By virtue of its endurance and long-range capabilities, the *Lanc* was particularly useful in search operations requiring coverage of broad expanses of the Canadian wilds.

The honour of being the last unit of any air force to fly this fabulous aircraft must go to No. 408 Sqn, RCAF, which, with no little regret, says goodbye to its *Lancs* on 1 April after a 16-year association with them on photo and reconnaissance operations. To the eternal credit of the *Lancaster*, the RCAF is discontinuing its use, not because of inadequate performance, but because of excessive maintenance costs attributable to lack of spares, particularly engine parts.

In the *post-Lancaster* era may the grand champion be revered not as a relic of bygone air power, but as a symbol of quality in aircraft design; may it be considered not as relegated to obscurity, but as retired to immortality. If ever a monument be dedicated to aircraft that have fought for freedom's way, let a place of pre-eminence be reserved for the *Lancaster*, which towers above them all.